

REMARKS

Examiner T. Pham is thanked for the thorough examination and search of the subject Patent Application. Claims 48, 49, 51-55, 61-66, 70-73, and 76 have been amended and Claims 78-87 have been canceled.

The making final of the restriction requirement is noted. Non-elected claims 78-87 are hereby canceled. A divisional application to the non-elected claims will be filed once the elected claims are found allowable.

Reconsideration of the rejection of claims 47-77 under 35 U.S.C. 112, first paragraph is requested in view of the amendments to the Specification and the drawings. The amendments show the single via 11 isolated from other vias 41.

Reconsideration of the rejection of Claims 47-77 under 35 U.S.C. 112, second paragraph, is requested in view of the amendments to the Claims 47, 48, 51-55, 61-66, 70-73, and 76. It is believed that the amendments to the claims make clear the meaning of the location of and relationship between the isolated vias and overlying copper lines and the other vias located elsewhere on the substrate.

All Claims are believed to be in condition for Allowance, and that is so requested.

Reconsideration of the rejection under 35 U.S.C. 103 of Claims 47-54, 56-58, 61-65, 67, 69-72, 74, and 76-77 as being unpatentable over Andricacos et al in view of Kazuhiko Kasahara is requested in view of Amended Claims 47, 48, 51-54, 61-65, 70-72, and 76 and in accordance with the following remarks.

It is agreed that Andricacos et al teaches fabricating copper alloy interconnection lines. However, Fig. 9 shows two copper alloy vias located close together and contacting the same underlying copper alloy line through the middle dielectric layer. Applicants' invention addresses single copper vias isolated from other copper vias. This means that no other copper vias are in the vicinity of the single copper via. Kasahara teaches formation of "a plurality of rows of slits 16" (first line of the Constitution). Applicant's invention provides a slot in a copper line only in the vicinity of a single isolated via and adjacent to the single isolated via. This important distinction is claimed in Claims 47 and 70. Kasahara shows many more slots throughout the copper line, not only adjacent to the single isolated via. Neither reference teaches or suggests placing a stress-relieving slot only in the vicinity of a single isolated via.

Reconsideration of the rejection under 35 U.S.C. 103 of Claims 47-54, 56-58, 61-65, 67, 69-72, 74, and 76-77 as being unpatentable over Andricacos et al in view of Kazuhiko Kasahara is requested in view of Amended Claims 47, 48, 51-54, 61-65, 70-72, and 76 and in accordance with the remarks above.

Reconsideration of the rejection under 35 U.S.C. 103 of Claims 55, 59-60, 66, 68, 73, and 75 as being unpatentable over Andricacos et al in view of Kazuhiko Kasahara and further in view

of Lur et al is requested in view of Amended Claim 47, 48, 51-55, 61-66, and 70-73 and in accordance with the following remarks.

Applicants' slot, having overlapping first, second, and third portions, is quite different from the continuous trench of Lur et al. Lur's continuous trench surrounds each metal line as seen in Fig. 3. As seen in Fig. 7, the trenches are filled with a dielectric layer 28 (col. 3, lines 46-49). Furthermore, tungsten plugs 32 are formed to connect metal lines 20 and 40 (col. 3, lines 49-52). This has nothing to do with Applicants' method of forming slots within a metal line adjacent to a single isolated via. Claims 47, 52, and 70 have been amended to make it clear that the slots are formed within the copper line adjacent to the interface between the copper line and the single via. Lur's "slots" are not formed within metal lines, but are dielectric-filled trenches between and completely surrounding all metal lines. None of the references, singly or in combination, teach or suggest forming a slot in an overlying and/or underlying metal line adjacent to a single isolated via.

Reconsideration of the rejection under 35 U.S.C. 103 of Claims 55, 59-60, 66, 68, 73, and 75 as being unpatentable over Andricacos et al in view of Kazuhiko Kasahara and further in view of Lur et al is requested in view of Amended Claim 47, 48, 51-55, 61-66, and 70-73 and in accordance with the remarks above.

Reconsideration of the rejection under 35 U.S.C. 103 of Claims 47-77 as being unpatentable over Chang et al in view of Chan is requested in view of Amended Claims 47, 48, 51-55, 61-66, 70-73, and 76 and in accordance with the following remarks.

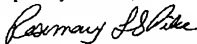
While it is agreed that Chan teaches the use of copper interconnects, Applicants' slot, having overlapping first, second, and third portions, is quite different from the continuous trench of Chang et al. As in Lur et al, the continuous trench of Chang et al surrounds each metal line as seen in Fig. 5. As seen in Fig. 7, the trenches are filled with a dielectric layer 28 (col. 4, lines 59-62). Furthermore, tungsten plugs 32 are formed to connect metal lines 20 and 40 (col. 4, lines 62-65). This has nothing to do with Applicants' method of forming slots within a metal line adjacent to the interface between the copper line and the single via. Chang's "slots" are not formed within metal lines, but are dielectric-filled trenches between and completely surrounding all metal lines. None of the references, singly or in combination, teach or suggest forming a slot in an overlying and/or underlying metal line adjacent to a single isolated via.

Reconsideration of the rejection under 35 U.S.C. 103 of Claims 47-77 as being unpatentable over Chang et al in view of Chan is requested in view of Amended Claims 47, 48, 51-55, 61-66, 70-73, and 76 and in accordance with the remarks above.

Allowance of all Claims is requested.

It is requested that should Examiner Pham not find that the Claims are now Allowable that the Examiner call the undersigned at 765 4530866 to overcome any problems preventing allowance.

Respectfully submitted,



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